

Comparisons of Job Characteristics

Focus Occupation: [Civil Engineering Technicians \(17-3022\)](#)

Associated Occupation: [Civil Engineers \(17-2051\)](#)

[Compare Knowledge](#)

[Compare Skills](#)

[Compare Abilities](#)

[Compare Detailed Work Activities](#)

[Compare Tools and Technologies](#)

<<	Focus occupation element is much lower
<	Focus occupation element is lower
0	Focus occupation element is at a similar level
>	Focus occupation element is at a higher level
>>	Focus occupation element is at a much higher level

Knowledge

Similarity of Focus Occupation to Associated Occupation: 93

Focus Occupation: Civil Engineering Technicians (17-3022)

Associated Occupation: Civil Engineers (17-2051)

Associated Occupation's Key Knowledge Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating		Evaluation of Focus Occupation
Engineering and Technology	5.7	24.5	15.6	<<	Extensive education and/or training may be required
Design	5.2	23.4	14.1	<<	Extensive education and/or training may be required
Building and Construction	4.0	21.6	15.1	<<	Extensive education and/or training may be required
Mathematics	9.2	20.0	15.0	<<	Extensive education and/or training may be required
Physics	4.3	15.8	7.0	<<	Extensive education and/or training may be required
Transportation	4.6	13.9	8.6	<<	Extensive education and/or training may be required
Administration and Management	8.4	13.0	8.2	<<	Extensive education and/or training may be required
Public Safety and Security	6.9	12.6	10.6	<	Expanded education and/or training may be required
Law and Government	5.9	11.3	6.7	<<	Extensive education and/or training may be required
Chemistry	4.8	10.8	3.6	<<	Extensive education and/or training may be required
Geography	3.9	9.7	9.0	0	Current knowledge level may be sufficient

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Skills

Similarity of Focus Occupation to Associated Occupation: 80

Focus Occupation: Civil Engineering Technicians (17-3022)

Associated Occupation: Civil Engineers (17-2051)

Associated Occupation's Key Skills Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Mathematics	6.2	15.7	8.7	<<	Extensive development of skills in this area may be required
Operations Analysis	5.0	14.6	7.9	<<	Extensive development of skills in this area may be required
Complex Problem Solving	9.1	14.5	9.4	<<	Extensive development of skills in this area may be required
Judgment and Decision Making	9.4	14.5	7.5	<<	Extensive development of skills in this area may be required
Science	4.5	11.9	5.4	<<	Extensive development of skills in this area may be required
Systems Analysis	6.5	11.7	6.9	<<	Extensive development of skills in this area may be required
Systems Evaluation	6.4	11.7	6.6	<<	Extensive development of skills in this area may be required
Management of Personnel Resources	6.9	11.2	6.9	<<	Extensive development of skills in this area may be required
Management of Material Resources	3.7	9.1	4.3	<<	Extensive development of skills in this area may be required
Management of Financial Resources	3.3	8.9	4.4	<<	Extensive development of skills in this area may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Abilities		Similarity of Focus Occupation to Associated Occupation: 95			
Focus Occupation: Civil Engineering Technicians (17-3022) Associated Occupation: Civil Engineers (17-2051)					
Associated Occupation's Key Abilities Elements	Average Rating, All Occupations	Associated Occupation's Rating	Focus Occupation's Rating	Evaluation of Focus Occupation	
Problem Sensitivity	11.1	15.4	10.8	<<	Extensive improvement in abilities may be required
Deductive Reasoning	10.6	15.2	11.4	<<	Extensive improvement in abilities may be required
Mathematical Reasoning	6.3	14.9	10.3	<<	Extensive improvement in abilities may be required
Inductive Reasoning	10.2	14.4	9.9	<<	Extensive improvement in abilities may be required
Visualization	7.5	14.1	11.4	<	Some improvement in abilities may be required
Number Facility	6.3	13.9	9.2	<<	Extensive improvement in abilities may be required
Information Ordering	9.9	13.8	10.3	<<	Extensive improvement in abilities may be required
Category Flexibility	9.0	13.4	9.4	<<	Extensive improvement in abilities may be required
Flexibility of Closure	7.8	13.3	7.4	<<	Extensive improvement in abilities may be required
Perceptual Speed	7.4	11.8	6.7	<<	Extensive improvement in abilities may be required
Speed of Closure	5.9	9.9	6.2	<<	Extensive improvement in abilities may be required

The maximum possible rating is 25.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Activities that Both Occupations Have in Common

Similarity of Focus
Occupation to Associated
Occupation: 98

Focus Occupation: Civil Engineering Technicians (17-3022)
Associated Occupation: Civil Engineers (17-2051)

Work Activities	Exclusivity of Activity
Analyze engineering design problems	69
Analyze scientific research data or investigative findings	27
Analyze technical data, designs, or preliminary specifications	47
Calculate engineering specifications	64
Communicate technical information	4
Conduct land surveys	81
Conduct plant location surveys	87
Confer with engineering, technical or manufacturing personnel	25
Develop plans for programs or projects	31
Draw maps or charts	69
Draw prototypes, plans, or maps to scale	57
Estimate cost for engineering projects	69
Estimate time needed for project	64
Evaluate costs of engineering projects	70
Evaluate engineering data	60
Examine engineering documents for completeness or accuracy	62
Explain complex mathematical information	30
Inspect facilities or equipment for regulatory compliance	51
Inspect project operations, or site to determine specification compliance	72
Interpret aerial photographs	69
Interpret maps for architecture, construction, or engineering project	77
Judge distances	89
Judge soil conditions	77
Operate land or site surveying instruments	80
Prepare technical reports or related documentation	22
Read blueprints	10
Read maps	42
Read technical drawings	7
Recognize construction industry codes or symbols on blueprints	87
Resolve engineering or science problems	46
Understand construction specifications	53
Understand engineering data or reports	48
Understand property documents	77
Use building or land use regulations	65
Use computer aided drafting or design software for design, drafting, modeling, or other engineering tasks	58

Use drafting or mechanical drawing techniques	50
Use knowledge of materials testing procedures	70
Use knowledge of regulations in surveying or construction activities	78
Use land surveying techniques	80
Use scientific research methodology	21
Use technical regulations for engineering problems	61

Not all positions in these occupations will necessarily perform all of the listed activities. The exclusivity rating is an indication of how unique the activity is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations engage in that activity.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.

Tools and Technologies that Both Occupations Have in Common

Similarity of Focus
Occupation to Associated
Occupation: 80

Focus Occupation: Civil Engineering Technicians (17-3022)
Associated Occupation: Civil Engineers (17-2051)

Tools and Technologies	Exclusivity
Audio and visual equipment	4
Computer printers	2
Computers	1
Content authoring and editing software	1
Indicating and recording instruments	2
Industry specific software	1
Information exchange software	1
Land surveying instruments	19
Length and thickness and distance measuring instruments	2
Measuring and layout tools	3
Meteorological instruments	16
Network applications software	1
Personal communication devices	2

Not all positions in these occupations will necessarily use all of the listed tools and technologies. The exclusivity rating is an indication of how unique the tool or technology is amongst all occupations. The maximum rating is 100. High scores indicate that only a small number of occupations use that tool or technology.

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section analysis of O*NET (Occupation Information Network) data.